

## Pathway to zoonoses control and elimination in Africa

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# Editorial

## Pathway to zoonosis control and elimination in Africa



**Prof. Bassirou Bonfoh,  
Director of Afrique One-ASPIRE**

Africa is facing a range of health problems that arise from complex human, animal and environmental interactions (e.g. Ebola, avian flu, brucellosis, Rift Valley fever). To address endemic and emerging zoonotic diseases, One Health emerged as a promising approach in the last decade. Thanks to the networks in research and policy circles established in Africa since 2006, this approach thrives within science and society and gradually gains a foothold in African and international policy structures too.

The consortium Afrique One, under the African Institutions Initiative of the Wellcome Trust, has built a critical mass of One Health researchers and practitioners in Africa. Under the current DELTAS Africa initiative, the research consortium Afrique One- (African Science Partnership for Intervention Research Excellence)

ASPIRE aims at building a generation of researchers and practitioners that are effectively implementing this approach in their agenda for zoonotic disease elimination.

The guiding principle is to offer a true transdisciplinary and inter-sectoral collaboration platform for adding value to the health system. While others consider this approach as disciplinary or institutional, our pride today are international and continental initiatives promoting One Health.

**'To address endemic and emerging zoonotic diseases, One Health emerged as a promising approach in the last decade ,**

The main contribution of Afrique One-ASPIRE is building the capacity of African young scientists to engage in research-intervention on five main issues, namely rabies elimination, brucellosis control, environmental tuberculosis (TB) control, mitigating foodborne diseases and nutritional illnesses, zoonosis surveillance and response systems.

Prof. Bassirou Bonfoh is a veterinary scientist with significant research experience in infectious disease epidemiology and the Director General of Centre Suisse de Recherches Scientifiques in Côte d'Ivoire (CSRS). He has strongly contributed to the validation of the One Health approach in zoonotic control programmes throughout his research.

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## The fight for the elimination of zoonotic diseases through 'One Health' started

I declare on behalf of the Government of Côte d'Ivoire the official launch of the Africa One-ASPIRE. With these words Prof. Thiam Assane, cabinet director of the Ivorian Ministry of Higher Education and Scientific Research, officially launched the research programme Afrique One-African Science Partnership for Intervention Research Excellence (Afrique One-ASPIRE). It was on July 21<sup>st</sup>, 2016 in Abidjan during a press conference hosted by Prof. Bassirou Bonfoh, Director-General of the Centre Suisse de Recherches Scientifiques en Côte d'Ivoire (CSRS). The official launch of Afrique One-ASPIRE was held in the presence of the ambassador of Switzerland and the charge d'affaires of the embassy of Great Britain in Côte d'Ivoire, as well as vice-deans of several Ivorian universities, ECOWAS representatives and more than twenty journalists of the national and international media.

According to Prof. Bonfoh the new research program will enable training of 400 undergraduate students, 18 Masters students, 16 PhD students and 13 Postdoctoral scientists. The researchers trained will work on themes related to rabies, TB, brucellosis, foodborne diseases, nutritional illnesses and surveillance-response. Monitoring of emerging diseases will be of high priority in order to respond to and resolve health issues as they arise.

Afrique One-ASPIRE wants to contribute to improving health of African populations by controlling and elimi-



Prof. Bassirou Bonfoh during his presentation

nating zoonotic diseases using a One Health-research approach. This concept advocates tackling health issues through a common framework which is linking the health of animals, human and the environment.

Afrique One-ASPIRE covers nine African institutions (Beca/ILRI, CSRS, EISMV, IHI, IRED, NIMR, NMIMR, NMAIST, SUA), five other African partners (KCRI / KCMC, MAKUN, MUHAS, TAWIRI, UDSM) and two European partners (University of Glasgow and Swiss TPH) in nine countries (Côte d'Ivoire, Senegal, Ghana, Chad, Tanzania, Kenya, Uganda, UK, Switzerland).

## Ecosystem and population health Capacity building of African research institutions was one of the core of activities of Afrique One



Last management board meeting of Afrique One

Afrique One is a consortium of partners with a common vision to strengthen the capacity of West and East African researchers to tackle major challenges in ecosystem health in the region. After more than six years, main evidence could be summarized as follows (i) a critical mass of postdoc, PhD and Master are developing under the umbrella of the One Health concept, (ii) all institutions improved their research environment mainly on governance including procedures and goods practices (iii) cost-effective solutions to deal with existing shortcomings in regional research

infrastructure have been implemented through sharing of facilities, use of lab equipment and samples among partner organizations, (iv) strengthening of intra and inter consortium relationship including regional partners to mitigate health issues in Africa. In partnership with some northern partners these African institutions involved in Afrique One broken language barriers to move for competitive research and enabled the scale and scope of scientific, methodological and research management training across the consortium. This initiative was under the leadership of Centre Suisse de Recherches Scientifiques en Côte d'Ivoire which benefited in improvement of finance management and which share this experience across partners through delivering soft skills to improve research environment. Better perspectives come from this initiative in order to move for research and intervention approach through transdisciplinary.

# News **Afrique One-ASPIRE kick-off meeting**

## The consortium appropriates AESA administrative and financial standards and trains its members in transdisciplinary research



The members of Afrique One-ASPIRE and AESA staff

From the 19<sup>th</sup> to 23<sup>rd</sup> September 2016 in Kampala, Uganda, more than 50 scientists came from eastern and western Africa and Europe to participate in the kick-off meeting of the Afrique One-ASPIRE consortium, the second phase of an African research program that aims to train the next generation of African researchers through the 'One Health' approach. All the participants committed themselves to comply with the standards of the Alliance for Accelerating Excellence in Science in Africa (AESA) program under the DELTAS Africa Initiative.

Prof. John David Kabasa, Principal of Makerere University and Dr Tom Kariuki, Director of AESA were present at the Afrique One-ASPIRE Kick Off Meeting. Prof. Kabasa, presented several studies on diseases in Africa and was asking for answers to why diseases persist despite the large amount of research studies. He then challenged Afrique One-ASPIRE to become part of the solution and find the way to tackle and to eliminate them.

Dr. Kariuki reminded the audience of the success of Afrique One-ASPIRE at the four selection stages of the DELTAS initiative winners before expressing his encouragement and confidence to all Afrique One-ASPIRE stakeholders. He further expressed that scientific research is one of the development drivers in Africa. According to him, 'from a hopeless continent in 2000, Africa became a hopeful continent in 2013 and will be an innovation continent in 2030' thanks to scientific research.

Prof. Bassirou Bonfoh, presented the vision of Afrique One-ASPIRE which is: 'building Pan-African research capacity in One Health' – an approach that is expected

to contribute to the elimination of rabies, brucellosis, mycobacterial infections and foodborne diseases within our programme. With the surveillance-response of zoonotic diseases, each of these diseases represents a Training Thematic Programme (TTP) which is the core of the Afrique One-ASPIRE structure. The kick-off meeting was an opportunity to prepare TTP calls for applications for young researchers, to identify research topics and plan activities for the next five years.

The institutions involved in Africa One-ASPIRE had working sessions with Isabel Imbuye, AESA Grants Accountant, to improve program management skills within AESA. In addition to the management skills training, the kick-off meeting Africa One-ASPIRE was conducting a 2-day training on transdisciplinary research from the 22<sup>nd</sup> to 23<sup>rd</sup> September 2016, which included a field visit. The goal of this training was to build researcher capacity in transdisciplinary approaches for the elimination of zoonoses. Dr Constanze Pfeiffer, Sociologist and Prof. Jakob Zinsstag, Veterinary-epidemiologist from the Swiss Tropical and Public Health Institute (Swiss TPH) were hosting the training.



Field visit in a vaccination campaign of dogs against rabies

The trainees and the facilitators conducted a field visit in the school of St Paul Kibadyo where was held a vaccination campaign of dogs against rabies and the Health Centre Mutundwe 'EDDWALIRO' in Kampala where they met with nearby residents. It was in the afternoon of the 22<sup>nd</sup> September. The trainees were split in four groups and discussed with the local population about rabies. The goal of this activity was to know the better approaches to eliminate rabies in Kampala. At the end of the training, all the participants received a certificate.


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# '3' questions to Dr Tom Kariuki

## 'AESA is proud of the work that Afrique One-ASPIRE is doing'

Tom Kariuki is Director of the Alliance for Accelerating Excellence in Science in Africa (AESA), a new funding platform for research jointly created by the African Academy of Sciences (AAS) and the New Partnership for Development Agency (NEPAD). He previously served as the Director of the Institute of Primate Research/National Museums of Kenya.



Dr Tom Kariuki, Director of AESA

### Afrique One-ASPIRE: Why the Alliance for Accelerating Excellence in Science in Africa (AESA)?

**Dr Tom Kariuki:** The Alliance for Accelerating Excellence in Science in Africa (AESA) was created by the African Academy of Sciences (AAS) and the New Partnership for Africa's Development Planning and Coordinating Agency (NEPAD) with the support of three international funders —Bill & Melinda Gates Foundation, Wellcome and DFID —as a funding and agenda setting platform to address the continent's health and developmental challenges. AESA is in response to Resolution 10 of the Declarations, Decisions and Resolutions from the January 2015 African Union Heads of State Summit endorsing the creation of AESA as a platform to encourage the creation of health innovations for poor communities. Currently, Africa produces only 1.1% of the global scientific knowledge. Countries are also yet to meet an African Union target to spend 1% spending of GDP on science with the continent's investment in R&D amounting to 0.42% of the global total. As a consequence, Africa only has 164 scientists and engineers per million inhabitants, compared to developed countries with over 4000, and a lack of research infrastructure and resources have led to an average loss of about 20,000 professionals a year to countries outside the continent since 1990. These challenges collectively slow down the development, translation and use of scientific discoveries to address the myriad of challenges, such as diseases, poverty and environmental degradation. AESA is designed to contribute solutions to these challenges by supporting the best minds in Africa, giving them grants and providing conducive research environments for them to implement programmes that produce quality and relevant data that can impact on Africa's health and development outcomes.

### Afrique One-ASPIRE: How does AESA intend to sustain health research funding in Africa?

**Dr Tom Kariuki:** AESA recognises the role that governments are playing in funding research in Africa but more can be done. Part of our work will involve advocacy to engage and encourage governments to increase their funding so there can be robust budgets for research and STI and to train future generations of scientists. Policymakers need to understand that science is a long term investment that can take time to pay off. The economic growth of countries like South Korea and China is attributable to their large and sustained investment in science. Policymakers need to see impact. We will also be amplifying the work of the scientists who are part of our programmes to highlight the benefits of science not just to the policymakers but to the wider public, which is the intended beneficiary of research outputs. The programmes we support cover wide ranging

science and health research issues including genomics and infectious and zoonotic diseases, all of which will generate and are generating new knowledge, which can inform policy. We hope by highlighting the relevant science on development and health issues, policymakers will see impact and the need for increasing funding for health and other research.

**'Africa produces only 1.1% of the global scientific knowledge ,**

### Afrique One-ASPIRE: What do you expect from a consortium such as Afrique One-ASPIRE working on neglected zoonosis?

**Dr Tom Kariuki:** AESA is proud of the work that Afrique One-ASPIRE is doing to train masters, PhD and postdoctoral fellows and would like to see this continue. The emergence of Ebola and Zika demonstrated the need to generate evidence that governments and funders can use to respond to outbreaks. It also exposed our lack of capacities in prevention, treatment and diagnostics, surveillance, emergency preparedness, resources and leadership during an outbreak. We are looking forward to the consortium providing more knowledge to combat and treat the diseases and to guide how the global community responds to future outbreaks and sharing this knowledge with researchers across the continent for a fast effective response.

# Dossier ➤ Transdisciplinary research in disease elimination



Prof. Jakob Zinsstag,  
Veterinary-epidemiologist,  
Deputy Head of the  
Department of Epidemiology  
and Public Health  
at Swiss TPH

**T**ransdisciplinary approaches relate academic scientists and society in the co-production of knowledge for societal problemsolving ([www.transdisciplinarity.ch](http://www.transdisciplinarity.ch)). For this purpose researchers engage with communities, authorities and other stakeholders in participatory processes to identify problems, discuss research approaches

and results and decide on interventions together. Any knowledge counts and contributes to the problem solving. Often this is done using participatory seminars and focus group discussions with all possibly involved stakeholders. Thereby it is important to understand relations of power among them and the role of gender and other social factors that could affect the way the involved people would communicate with each other. There are many pitfalls threatening such processes and therefore it is very important that transdisciplinary approaches are accompanied or even guided by social scientists to assure that the co-production of knowledge is done in a professional way.

Transdisciplinarity is pivotal for the science of disease elimination (Zinsstag, 2013). It is not sufficient to have good vaccines and drugs. It is critically important to secure the access to interventions to communities to avoid low

coverage when aiming at disease elimination (Muthiani et al., 2015). Communities usually know best what kind of service is accessible, affordable, adequate and culturally sensitive to them. If they can discuss this with authorities

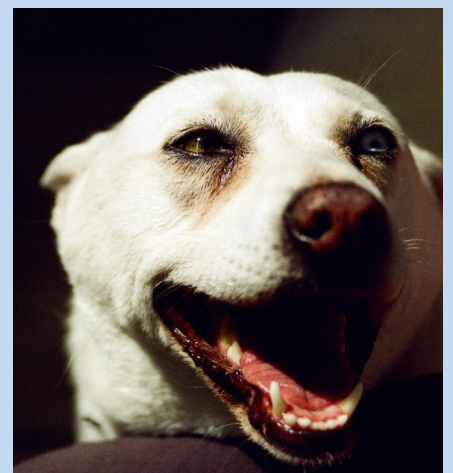
**‘In Afrique One-ASPIRE, transdisciplinary methods will be taught and applied to the study of the epidemiology of zoonoses, food hygiene and intervention’**

and technical experts, for example mass vaccination campaigns can be much better planned to be effective. In Afrique One-ASPIRE, transdisciplinary methods will be taught and applied to the study of the epidemiology of zoonoses, food hygiene and interventions. For this we also have to consider intercultural aspects when working between East- and West Africa. It requires a high level of self-reflexivity to recognize that our own perspective is only one way how to look at a topic and that this has to be mirrored by the views of others on the way towards solving problems of disease elimination.

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## Zoom on ➤ Rabies Research

Studies indicate that eliminating canine rabies in Africa is an entirely achievable objective. Nevertheless canine-mediated rabies in humans remains a major cause of mortality, particularly in poorer regions. Research has already showcased the elimination of dog rabies in N'Djaména, Chad, while in Tanzania a highly effective platform – including an internationally trained team of local scientists – in canine rabies research has been established over the past seven years. The fellowships under Afrique One-ASPIRE address epidemiological, social, political and cultural factors influencing the effectiveness of elimination interventions and provide opportunities for fellows to work within a largescale, global-health priority. The rabies Thematic Training Program (TTP) – led by the Ifakara Health Institute (Tanzania) and the Centre Suisse de Recherches Scientifiques en Côte d'Ivoire (CSRS) – offers opportunities for 3 MSc, 3 PhD and 1 Post-Doctoral fellowships.



## We were... ➤

- at the 4<sup>th</sup> International One Health Congress & 6<sup>th</sup> Biennial Congress of the International Association for Ecology and Health in Melbourne, Australia, from 3<sup>rd</sup> to 7<sup>th</sup> December 2016
- at the One Health Day in Abidjan, Côte d'Ivoire, the 23<sup>rd</sup> November 2016
- at the meeting on 'Social science and public health to prepare for emerging diseases' in Bouaké, Côte d'Ivoire, the 16<sup>th</sup> November 2016
- at the One Health technical and ministerial meeting to address zoonotic diseases and related public health in Dakar, Senegal, from the 8<sup>th</sup> to 11<sup>th</sup> November 2016



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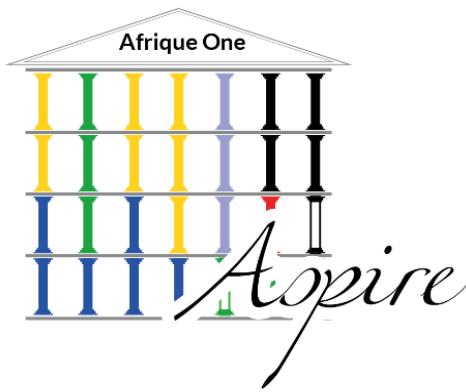
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## We were...

- at the International Meeting on Emerging Diseases and Surveillance (IMED 2016) in Vienna, Austria, from 4<sup>th</sup> to 7<sup>th</sup> November 2016
- at the Grand Challenges Conference 2016 in London, Great Britain, from the 24<sup>th</sup> to 26<sup>th</sup> October 2016
- at the 30th Annual Joint Scientific Conference (AJSC) of the National Institute for Medical Research (NIMR) in Dar es Salaam, Tanzania, from 4<sup>th</sup> to 6<sup>th</sup> October 2016
- at the Summer school on 'communicating science to specific target-audiences' in Grand-Bassam, Côte d'Ivoire, from 26<sup>th</sup> to 30<sup>th</sup> September 2016
- at the DELTAS Africa inception meeting in Nairobi, Kenya, from 4<sup>th</sup> to 8<sup>th</sup> July 2016



# Afrique One-ASPIRE

## One Health From Theory to Practice

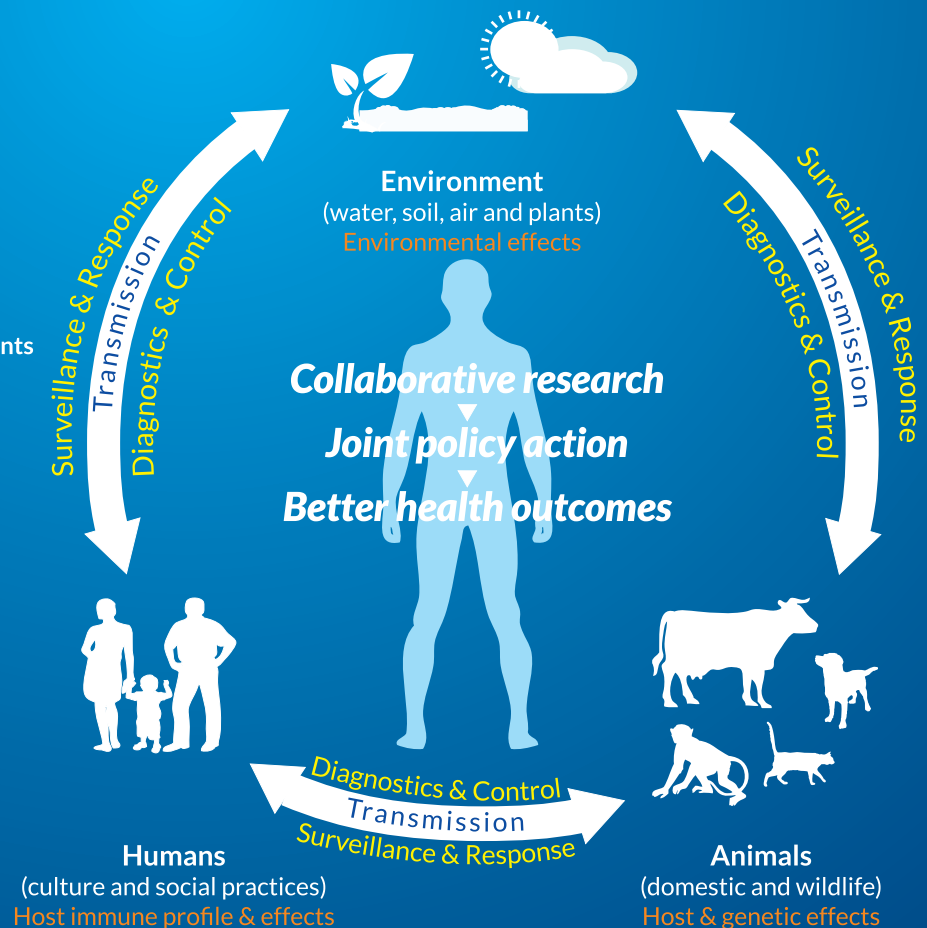
### Afrique One-ASPIRE 'One Health' framework

#### Principles

Transdisciplinary research  
Inter-sectoral intervention  
Multidirectional health components  
Long-term processes

#### Applications

Major infectious diseases  
Non infectious diseases  
Foodborne diseases  
Zoonotic diseases



The approach is flexible. It bridges disciplines, sectors and societies.  
One Health is a tool for cost-effective health governance.

#### Added Value

- Surveillance systems
- Control of strategies

- Capacity building
- Awareness

- Cost-benefit sharing
- Food security